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## (54) IMPROVED ROOM-TEMPERATURE-CURABLE COMPOSITION

PROBLEM TO BE SOLVED: To obtain a room-temp.-curable compsn. improved in depth curability and adhesiveness by incorporating a polymer having hydrolyzable silicon groups and at least one cure catalyst selected from among tin compds. into the same.

SOLUTION: This compsn. contains 100 pts.wt. polymer comprising a polymer (A) having hydrolyzable silicon groups represented by the formula: -SiXaR13-a and/or a polymer (B) having a polyoxyalkylene main chain, 0.01-10 pts.wt. at least one cure catalyst selected from among tin compds., and a filler, a plasicizer, etc. The tin compds. include a compd. (K) represented by the formula: R22Sn(OZ)2, a compd. (L) represented by the formula: [R22Sn(OZ)2]O, reaction product (M) of compd. K and a low-molecula compd. having a hydrolyzable silicon group, and a reaction product (N) of compd. L and a low-molecular compd. having a hydrolyzable silicon group. At least a part of polymer A is a polymer having a hydrolyzable silicon group of the formula wherein a is 3. In the formula, R1 is a monovalent org. group; R2 and Z are each a monovalent hydrocarbon group; X is a hydroxyl or hydrolyzable group; and a is 1-3.

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polymer which has a hydrolytic silicon group whose a of a formula (1) is 3, and a group which consists Claim 1It is a polymer which has a hydrolytic silicon group expressed with a following formula (1), A room-temperature-curing nature constituent which uses as an essential ingredient at least one sort of tin compounds (K) in which some or all of this polymer is chosen from a polymer (A) which is a of following - (K-1) (K-4) as a curing catalyst.

- SIX<sub>a</sub>R<sup>1</sup> 3-a -- (1)

among a formula (1), X shows a hydroxyl group or a hydrolytic basis, and a shows 1, 2, or 3,) however, when those R1 may be the same, or may differ, when two or more R1 exist, and two or more X exists, those X may be the same or may differ, tin compound (KX(K-1): — a tin compound expressed with a (R1 shows a univalant organic group substitution of the carbon numbers 1-20, or unsubstituted

(K-3): (K-1) A mixture or a reactant with a low molecular weight compound (L) which has a hydrolytic (K-2): A tin compound expressed with a following formula (3).

(K-4); (K-2) A mixture or a reactant with a low molecular weight compound (L) which has a hydrolytic slicon group.

R<sup>2</sup> <sub>2</sub>Sn(OZ) <sub>2</sub> — – (2)

%sn (OZ)] -- %-- (3)

portion which can form a coordinate bond to Sn by intramolecular,) two or more R<sup>2</sup> may be the same,  ${
m R}^2$  is a univalent hydrocarbon group of the carbon numbers 1–20 among a formula (2) and (3), and Z Claim 2]It is a polymer which has a hydrolytic silicon group expressed with a following formula (1), A is a univalent hydrocarbon group of tha carbon numbers 1-20, or an organic group which has a room-temperature-curing nature constituent for which some or all of this polymer uses as an or may differ, and two or more Z may be the same, or may differ. Æ

ssential ingredient a tin compound (M) which consists of following (M-1) and/or (M-2) as a polymer

A) which is a polymer in which a of (1) has a hydrolytic silicon group which is 3, and a curing

SIX<sub>a</sub>R<sup>1</sup> 3-- (1)

R<sup>1</sup> is a univalent organic group substitution of the carbon numbers 1-20, or unsubstituted among a those R1 may be the same, or may differ from each other, when two or more R1 exist, and two or formula (1), X is a hydroxyl group or a hydrolytic basis, and a is 1. 2, or 3,) however, when \*\* and nore X exists, those X may be the same or may differ.

parbon numbers 1–20, and) two or more R<sup>2</sup> may be the same, or may differ. A reactant produced by 4 tin compound (M) ; (M-1). An oxygenated tin compound expressed with at least one sort and R<sup>2</sup> SnO which are chosen from a group which consists of a compound, an acetylecetone, and ethyl acctoacctate which have a hydroxyl group (howevar, R<sup>2</sup> is a univalant hydrocarbon group of the

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JP,2000-109678,A [CLAIMS]

Claim 3]The room-temperature-curing nature constituent according to claim 1 whose tin compound .M-2): (M-1) A mixture or a reactant with a low molecular weight compound (L) which has a (K-1) is a compound expressed with a following formula (4) or a following formula (5). nydrolytic silicon group.

 $\mathbb{R}^3$  is a univalent hydrocarbon group of tha carbon numbers 1–20 among a formula (4) and  $\mathbb{C}$ , and  $\mathbb{C}$ nalogenation alkoxy group, and a cyanoalkoxy group.) two or more R<sup>3</sup> may be the same, or may differ, is the basis chosen from the group which consists of an amino group, the hydrocarbon group of the carbon numbers 1-8, a halogenated hydrocarbon group, a cyano alkyl group, an alkoxy group, a

Olaim 4]The room-temperature-curing nature constituent according to claim 1 or 2 whose molecular polyoxyalkylene polymer (B) in which a polymer (A) has a hydrolytic silicon group expressed with a Claim 5]The room-temperature-curing nature constituent according to claim 1, 2, or 4 which is a and two or more Y may be the same, or may differ. weights of a polymer (A) are 8000-50000.

Claim 8]The room-temperature-curing nature constituent according to claim 5 whose molecularweight-distribution M<sub>w</sub>/M<sub>n</sub> of a polyoxyalkylene polymer (B) is 1.7 or less.

[Claim 9]The room-temperature-ouring nature constituent according to claim 5. 6, 7, or 8 in which a power/alkylone polymer (9) contains a polymer (0). Burther produced by polymerizing a polymerization nature unsaturating roup content monomer (0). polyoxyalkylene polymer (B) contains a polymer (D) further produced by polymerizing a polymerization into a catalyst. The room-temperatura-curing nature constituent according to claim 5 or 6 which is a polymar produced by introducing a hydrolytic silicon group expressed with a formula (1). Claim 10] The room-tempersture-curing nature constituent according to claim 5, 6, 7, or 8 in which a an initiator. The room-temparatura-curing nature constituent according to claim 5, 6, or 7 which is a Claim 8]. A polyoxyalkylene polymer (B) is obtained by polymarizing cyclic ether under existence of existence of an initiator by polymerizing cyclic ether by making a composite metal cyanide complax polymer produced by molecular-weight-distribution M./M., introducing a hydrolytic silicon group Claim 7]A polyoxyalkylene polymer (B) at the end of a polyoxyalkylene polymer produced under expressed with a formula (1) into an end of a polyoxyalkylene polymer which is 1.7 or less.

or 11 which is a polymer in which some or all of a polymer (A) has simultanaoualy a hydrolytic silicon Claim 12]The room-temperatura-ouring natura constituent according to olaim 1, 2, 4, 5, 7, 8, 9, 10, group whose a in a hydrolytic allicon group whose a in a formula (1) is 1 or 2, and a formula (1) is 3. [Claim 13]The room-tamperature-curing nature constituent according to claim 1. 2, 4, 5, 7, 8, 9, 10, expressed with a glycidyl group and/or a formula (1).

Claim 11)The room-temperature-curing nature constituent according to claim 9 or 10 which is a

nature unsaturation group content monomer (G) in a polyoxyalkylene polymer (B).

unsaturation group content monomer (C) has a polymerization nature unsaturation group, and is

monomer which has a hydrolytic silicon group which a part or all of a polymerization nature

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or 11 in which a popular (A) contains but polymer who can be in the polymer to the case a in a polymer in which is a formula (1) is as a hydrothic alone when is in a formula (1) is as a hydrothic alone on which is 1 or 2, and a formula (1) is [Claim (4)] in come temperature curing nature constituent according to claim (1, 2, 4, 5, 3, 8, 9, 0). (In a solution county of the constituent according to claim (1, 2, 4, 5, 8, 9, 0). (In a solution county of the constituent according to claim (1, 2, 4, 3, 3, 9, 0). (In a solution county of the county

[Translation done.]

JP,2000-109678,A [DETAILED DESCRIPTION]

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# DETAILED DESCRIPTION

Detailed Description of the Invention

Field of the Invention]This invention relates to the room-temperature-curing nature constituent which gives the hardened material time to result in an adhesive manifestation excelled [ hardened naterial ] in the adhesive property over short and various substrates.

nave a hydrolytic silicon group, and uaing it for saalant, adhesives, etc. is known well, and is a useful Description of the Prior Art The method of making an end harden various kinds of polymers which

oolymers is liquefied at a room temperature, and when a hardened material holds pliability also at low tamperature comparatively and uses for sealant, adhesives, etc., it is provided with the desirable nethod industrially. The polymer especially whose main chain is polyoxyalkylene among such

hydrolytic bases combined, and the cure rate of tha polymer which has such an end becomes quick. It pardened material, or pliability, although the cure rate was quick to be sure. Especially these polymers )0003]As a constituent which uses such a polymer and it, a with a molecular weight of 15000 or less polymer and its constituent are indicated to JP.61-18570,B or JP.61-18582,B with the hydrolytic compound which has the same end hydrolytic silicon group by JP,3-72527,A, JP,4-283258,A, etc., In sombine with JP.58-10418 B or JP.58-10430 B as such a polymer — a molecular weight — 6000 or curing catalyst is usually performed. As a curing catalyst, organic metallic compounds, such as metal silicon group content polymer which two hydrolytic bases per silicon atom combine. Such a polymer remarkably inferior in the hardenability of the depths. Although the polymer in which the amount of has insufficient clongation and intensity of a hardened material, and, in the case of the constituent enough in particular in respect of the inner drying property in low temperature, the elongation of a polymers and molecular weight distribution are very narrow, and its constituent are known for the 0004]It is expected that, as for the silicon group which three hydrolytic bases combined with one 0005)In order to give room-temperature-curing nature to such a polymer, using what is called a pardened especially with the hygroscopic surface moisture in the air, there was a fault which is -- the polymer of low molecular weight is indicated comparatively. Such a polymer was not inproved, it was not able to be said to make it harden promptly and obtain a hardened material silicon group, the hydrolysis rate becomes quick as compared with the silicon group which two s a polymer which has a hydrolytic allicon group which three hydrolytic bases per silicon atom ad the fault that adhesive strength was low, when it was alone used for the use of adhesives. salt of carboxylic acid, acidity, or a basic compound is known, and carboxylate of tin and other his case, although the elongation, intensity, and hardenability of the hardened material have especially, that that hardensbility was still enough. pregnotin compounds are especially common,

libutyitin discetate, a cure rate is not what can fully be satisfied, a part for a part far especially from the surface of a cured body — the so-callad cure rate of the depths is insufficient, and there was a etravalent organotin compounds known as a well-known example, such as dibutyltin dilaurate and Problem(s) to be Solved by the Invention]However, when it is made to harden using as a catalyst 0007]Although the method of using the reactant of an oxygeneted tin compound and an ester problem also in an adhasiva property with a substrate.

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compound as a curing catalyst was also proposed by JP,1-58219,B as a trial which cancels such a

0008]In addition, the method of using a dialkyl tin bisacetylacetonate compound as a curing catalyst temperature is also improved. However, combination with the organic polymer known conventionally proposed by the above-mentioned literature etc. was not enough as internal hardenability compared (0009]A presentation which can improve depths hardenability and an adhesive property with a is also proposed by JP,61-141761,A, and the hardensbility in a room temperature and low ault, the hardenability in low temperature was not enough. with the speed of hardening of a surface layer.

substrate without worsening the pliability and workability greatly was desired to the polymer which has a hydrofytic silicon group as mentioned above.

Means for Solving the Problem]This invention relates to hardenability, especially a room-

temperature—ouring nature constituent by which time until it results in an adhesive manifestation was essential ingredient at least one sort of tin compounds (K) chosen from a polymer (A) which is a 0011]It is a polymer which has a hydrolytic silicon group expressed with a following formula (1), Some or all of this polymer is a room-temperature-curing nature constituent which uses as an shortened using a specific curing catalyst.

polymer which has a hydrolytic sillicon group whose a of (1) is 3, and a group which consists of following - (K-1) (K-4) as a curing catalyst. 0012]- SIX<sub>8</sub>R<sup>1</sup> 3-3 -- (1) (R<sup>1</sup> is a univalent organic group substitution of the carbon numbers 1-20, or unsubstituted among a formula (1), X is a hydroxyl group or a hydrolytio basis, and a is 1, 2, or 3,) however, when those R1 may be the sama, or may differ, when two or more R1 exist, and two or more X exists, those X may [0013]A tin compound (K) : (K-1): A tin compound expressed with a following formula (2). be the same or may differ.

(K-3): (K-1) A mixture or a reactant with a low molecular weight compound (L) which has a hydrolytic (K-4): (K-2) A mixture or a reactant with a low molecular weight compound (L) which has a hydrolytic (K-2): A tin compound expressed with a following formula (3). silicon group.

R<sup>2</sup> <sub>2</sub>Sn (OZ) <sub>2</sub> ... (2) silicon group.

(R<sup>2</sup> is a univalent hydrocarbon group of the carbon numbers 1-20 among a formula (2) and (3), and Z is a univalent hydrocarbon group of the carbon numbers 1-20, or an organic group which has a [R<sup>2</sup> <sub>2</sub>Sn (OZ)] <sub>2</sub>O ... (3)

portion which can form a coordinate band to Sn by intramolecular.) two or more R2 may be the same, [0014](Polymer (A)) In this invention, although polyoxyalkylene, polyester, polycarbonate, polyolefine, or may differ, and two or more Z may be the same, or may differ.

group, to introduce a hydrolytic silicon group and to be manufactured so that it may state below. [0016]As a raw material polyoxyalkylene polymer, a thing of a hydroxyl group end which makes oyolic etc. are mentioned as a main chain of a polymor (A), especially a thing that a main chain consists of [0015](Polyoxyalkylene polymer (B)) A polyoxyalkylene polymer (B) which has a hydrolytic silicon group expressed with a formula (1) is proposed by JP,3-47825,A, JP,3-72527,A, JP,3-79627,A, etc., polyoxyalkylene polymer which has a functional group, to make it not pass to the end via an organic system compound and a caesium systam compound, a composite metal cyanide complex catalyst, a polyoxyalkylene intrinsically is proferred. Hereafter, a main chain represents and explains a polymer ether etc. react and is manufactured is preferred under existence of a catalyst and existence of an initiator. As an initiator, a hydroxy compound etc. which have one or more hydroxyl groups can be tetrahydrofuran, etc. arc mentioned. As a catalyst, alkaline matal catalyats, auch as a potassium for example. As for a polyoxyalkylene polymer (B), it is preferred to use as a raw material a (henceforth a polyoxyalkylene polymer (B)) which is polyoxyalkylene among polymers (A). used. As cyclic cthar, athylene oxide, propylene oxide, butylene oxide, hexyleneoxide, a

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0017]in this invention, it is prafamed to use a polyoxyalkylene polymer of the amount of polymers of

metalloporphyrin catalyat, etc. are mentioned.

the molecular weights 8000-50000 as a raw material polyoxyalkylene polymer. Therefore, by [ which nethylene chloride, raact to a polyoxyalkylane polymer of low molecular weight comparatively. It is nanufactured using an alkali catalyst atc. I making many halogenated compounds, auch as a

preferred to use a polyoxyalkylene polymer manufactured using a polyoxyalkylene polymer and a 0018]moreover -- especially -- a ratio of weight average moleoular weight (M<sub>w</sub>) and a number composite metal oyanide complex catalyst which are acquired by quantifying many.

colymer, and, As for M\_/M, it is still more preferred that it is 1.6 or less, and, as for M\_/M,, it is iverage molecular weight (M<sub>n</sub>) — it being preferred that M<sub>w</sub>/M<sub>n</sub> uses 1.7 or less polyoxyalkylene

0019]A polyoxyalkylene polymer (B) which has a hydrolytic silicon group of this invention is obtained oolyoxyalkylene polymer as a raw material. When a polyoxyalkylene polymer (B) obtained considering t as a raw material is stiffened so that M\_/M, of a raw material polyoxyalkylene polymer is small, by denaturalizing and using an end group as a hydrolytic silicon group further, by using such a preferred that it is especially 1.5 or less.

pecomes low, and what has a the same elastic modulus is excellent in workability. Especially in such a what denaturalized and used an end of such an alkylene oxide polymer as a hydrolytic silicon group is axiatence of an initiator, Especially a thing produced by polymerizing alkylene oxide is preferred, and polyoxyalkylene polymer, make a composita metal cyanide complex into a catalyst, and Under slongation of a hardened material serves as high intensity greatly, and viscosity of a polymer

cthylanagyool dimethyl ether (glyme), diethylene glycol dimethyl ether (iig lime), etc. are preferred, and especially glyme is preferred from a point of handling at the time of manufacture of a complex. As the most preferred. [0020]A complex which uses zinchexacyano cobaltate as the main ingredients as a composite metal cyanide complex is preferred, and ether and/or an alcoholic complex are espacially preferred. The presentation can use what is intrinsically indicated to JP,46-27250,B. in this case, as ether,

preferred. As for especially a functional group number of a raw material polyoxyalkylene polymer, 2 or 0021]As for a functional group number of a raw material polyoxyalkylene polymer, two or more are 3 is preferred to enlarge pliability as the hardened material characteristic. As for especially a alcohol, t-butanol is preferred.

property and hardenability, 3-8 are preferred. As a raw material polyoxyalkylene polymer, copolymer functional group number of a raw material polyoxyalkylene polymer, when acquiring a good adhesive of a polyoxyethylene, polyoxypropylene, polyoxy butylene, polyoxy hexylene, polyoxy tetramethylen,

and two or more sorts of cyclic ether is specifically mentioned. [0022]Especially a desirabla raw material polyoxyalkylene polymer is the polyoxypropylene polyol of 2 method of the following (b) or (\*\*), a polyoxyalkylene polymer of olefin ands, such as an allyl end 6 value, and are polyoxypropylene diol and polyoxypropylene triol aspecially. When using for a

[0023]This polyoxyalkylena polymer (B) has a hydrotytic silioon group expressed with an end or a side chain of a chain with a following formula (1). polyoxypropylene monocar, can also be used.

RIRI is a univalent organic group substitution of the carbon numbers 1-20, or unsubstituted among a ormula (1), X is a hydroxyl group or a hydrolytic basis, and a is 1, 2, or 3.) however, when two or - SiX,R' 3-2 -- (1)

more R<sup>1</sup> exist, those R<sup>1</sup> may be the same, or may differ, and when two or more X exists, those X may be the same or may differ. [0024]A hydrolytic allicon group expressed with a formula (1) is usually introduced into a raw material

polyoxyalkylene polymer via an organic group. That is, as for a polyoxyalkylene polymer (B), it is preferred to have a basis expressed with a formula (2). -R0-SIX\_R1 3-3 ... (6)

exyl group, a cyclohexyl group, a phenyl group, etc. especially preferably, when two or more  $\mathbb{R}^1$  exist, A divalent organic group, R<sup>1</sup>, X, and a of R<sup>0</sup> are the same as that of the above among a formula (6).) alkyl group preferably, and they are a mathyl group, an ethyl group, a propyl group, a butyl group, a maubstituted, It is a with a carbon number of eight or less alkyl group, a phanyl group, or a fluoro 0025]R1in formula (1) (6) is a univalent organic group substitution of the carbon numbers 1-20, or

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those R<sup>4</sup> may be tha same, or may differ. [0026]As a hydrolytic basis in X. a halogon atom, an alkoxy group, an acyloxy group, an alkenyloxy

.0027]As for a carbon number of a hydrolytic basis which has a carbon atom among these, six or less four or less alkoxy group, an alkonyloxy group especially a methoxy group, an ethoxy basis, a propoxy are preferred, and four especially or less are preferred. As desirable X, a with a carbon number of group, a carbamoyl group, an amino group, an aminooxy group, a KETOKISHI mate group, etc. are group, or a propenyloxy group can be illustrated, when two or more X exists, those X may be the mantionad, for example.

0028]a is 1, 2, or 3. As for the number of hydrolytic silicon groups in one molecule of polymers, 1-8 0029]Although a method in particular of introducing a hydrolytic silicon group to a raw material are preferred, and 2-especially 6 are preferred.

polyoxyalkylene polymer is not limited, it can be introduced, for example by (b) of the following - a introducing an olefin group into an end of a polyoxyalkylene polymer which has a hydroxyl group is 0030](\*\*) A method to which a hydrosilyl compound expressed with it by a formula (7) after method of (\*\*).

HSiX<sub>a</sub>R<sup>1</sup> 3-4 -- (7)

to terminal hydroxyl groups of a polyoxyalkylene polymer which has a hydroxyl group, and combining it .0031]A method of making a compound which has an unsaturation group and a functional group react by either bond, estar bond, a urethane bond, or carbonate combination as a method of introducing an catalyst, can be used. Platinum system catalysts, such as chloroplatinic acid, platinum metal, a platinum chloride, and a platinum olefin complex, are proferred. As for a reaction to which a hydrosily olefin group, is mentioned. When polymerizing alkylene oxide, a method of introducing an olefin group into a side chain of a raw material polyoxyalkylene polymer can also be used by adding and carrying compound is made to react, it is preferably preferred to carry out at temperature of 60-120 \*\* for rhodium system catalyst, a cobalt system catalyst, a palladium system catalyst, and a nickel series out copolymerization of the olefin group content epoxy compounds, such as allyl glycidyl ether. [0032]When making a hydrosilyl compound react, catalysts, such as a platinum system catalyst, a (R<sup>1</sup>, X, and a are the same as the abova among a formula (7).)

[0033](\*\*) A method to which a compound expressed with an end of a polyoxyalkylene polymer which several hours 30-150 \*\*.

has a hydroxyl group by a formula (8) is made to react. R1 3-1-SIX -R9NOO ... (8)

As for the abova-mentioned reaction, it is preferably preferred to carry out at temperature of 50-150 (R1, X, and a are the same as the above smong a formula (8).) R9 is a divalent hydrocarbon group of A publicly known urethane-ized catalyst may be used in the case of the above-mentioned reaction. the carbon numbers 1-17.

[0034](\*\*) A method to which W basis of a silicon compound expressed with a formula (9) to this isocyanate group is made to react after making polyisocyanate compounds, such as tolylene disocyanate, react to an end of a polyoxyalkylene polymer which has a hydroxyl group and considering it as an isocyanate group end.

\*\* for several hours 20-200 \*\*.

(R1, R3, X, and a are the same as the above among a formula (9),) Active hydrogen containing group -Six\_-R<sup>9</sup>W ... (9)

as which W is chosen from a hydroxyl group, a carboxyl group, a sulfhydryl group, and an amino group olefin group into an end of a polycoxyalkylane polymer which has a hydroxyl group. [0036]W as a silron compound expressed with a formula (s) which is a sulfhydryl group, 3-mercapto propyAmethryd dinethocysilane, 3-mercapto propyAmethyl dinethocysilane, 5-mercaptopropyAmethyl expressed with a formula (9) whose W is a sufflydryl group are made to react after introducing an (the 1st class or the 2nd class). [0035](\*\*) A method to which the olefin group and a sulfhydryl group of a silicon compound

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methoxysilane, 3-meroaptopropyl triethoxysilane, etc. are mentionad.

ONTO/Projuveration in uniterior, such as a redical generator, mus be used, and en irrus be an each and such constitutions, such as a redical generator, must be used, and entirely an east with calculation indicator, depending on the case, As a polymerization initiator, a polymerization initiator, a polymerization initiator, as polymerization initiator, as polymerization initiator, 2.7. "association in the constitution of th

arry out at \$6-150 with revenal hours, then hours \$0.200 ex.

00030/Men a main chini to accept a polycovalisheen polymer (When main chinis of a polymer (W) 
mer polysiets and polycarborate, it can manufacture by the same process as a polycovalisheen 
mer polysiets of an explosite of a hydroxyl group end, and polycarborate of a hydroxyl group end as 
raw material, respectively.

which we may not in problems, the name measures to the name are globes as the polycyallydran bother with its polycefine of the drowing round ends, such as polykulations polyd and wide operation polykulation polyd, as a via mareful. After having used 14-lifed, follocu—1 endsyldering in polykulation polyd, as a via mareful. After having used 14-lifed, follocu—1 endsyldering is an initiation; making been triplinded into a satisfact and polymerizing endsyldering it can among many mare process as a polycoullydering only using a mareful operation. The polymer wide polymer is the polycoullydering of the pulsar mareful operation is polymer widely cannel on the polycoullydering of the pulsar mareful operation.

which has an isopropenty group at the end as a traw material. 90 (40) of the 30 polymer (A) in this 1000()[Hydrochro-illicon group whose a in a formula (1) is 3). It requires that a polymer (A) in this revention is a polymer in which all have "a hydrophoto alloon group whose a in a formula (1) is

? (Thereodord) "a hydrothot efficon group (E)" a pacel a basis whose X in a formula (1) is a with a zarbon number of four or less allows (E)" a pacelagle a basis whose X in a formula (1) is a with a carbon number of four or less allows group, i.e., the Tool allows why group is within a with a carbon number of four or less allows group, i.e., the Tool allows with its probability and supposed group, the carbon within his third should shall group as the carbon number of four or less and proper pacel and the carbon four the carbon for the carbon four the carbon for the c

chick-D-SCHHUGH, it is thought that the progresses by the recability conclusions he reached by a chick of the chick of the things of the progress of the progr

ON SIGN developes of the an enferonmentation by, the ansilvor you can like a exhon meter (DNA) developes of the fort filters by groups on wholey in early return of a silvord promp in the promption of the silvord promption of the silvord promption of the silvord promption and the silvord promption of the silvord promption of the silvord promption of the silvord promption and the latter and not another it is desirable. A first-shooking from and a tetrihot on pair of mere profession and the silvord promption of the silvord promption of the silvord promption of the silvord promption of the silvord promption and si

Obdiffilmen a polymer (A) is a popmer which has a hydrolydo pilicon group (C) as this hydrolydo Bislion group, That is when nabord (100 V hydrolydos diagnos groups (namely 0 to 1000) separcesced silicon group, That is when nabord (100 V hydrolydos diagnos groups (C) it is effective in a cure met before with a formal (A) in a polymer (A) are hydrolydos alloon groups (C) it is effective in a cure met before large, and a room-temperature-curing nature conditions to collect in capscially hardonaldight that larges and a room-temperature-curing nature conditions to collect in capscially hardonaldight that hydrolydos alloon group (C) aspectable (30 to (100 K of a hydrolydo silicon group (C) accessed with a hydrolydos alloon group (C) aspectable (30 to (100 K of a hydrolydo silicon group (C) accessed with a

formula (1).

The shadowithen a hydrolytic silicon group and a hydrolytic silicon group (E) whose a in a formula (1) is 1 for or an internalized, a rower-temperature-value, nature more transportation and the compatible in a good consistent which may be compatible in a good consistent which may be compatible in a good consistent otherwiselistic and fast carability is obtained.

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(10046)In this case, it is preferred that the percentage of a hydrolytic sillicon group (E) in all the hydrolytic sillicon groups expressed with a formula (1) in a polymer (A) is 5 to 80%. The characteristic

consequence as a demand is franch contribute by changing that its relaberful, the fit when the percentage of a hydrotyci silcon group (5) a 65 of 50, while selent inerdensability, a good external contribution of a hydrotyci silcon group (5) a 65 of 50, while selent inerdensability, a good external contribution of the public of a hydrotyci silcon group (5) a 60 to 50, an a statement of a hydrotyci silcon group (5) a 60 to 50, an a statement of hunsesterion needed for the state durings of a hydrotyci silcon group contribution and hunsesterion for selection desired and individually can be improved by league and bonds.

[6047]As for hydrotyci silcon groups other than inhethytic silcon group (5), in a hydrotyci silcon group contribution of the statement of the statement of the selection of the statement of the state

hydrobyte silecen proup Molite i e r Oz, and a thydrobke silecen group (E) were intermingfed, for enoughe, and a lin a formula (1) may use a method of (e/s) and (e/s) bozaher.

(b) als a power (C), a lin a formula (1) uses a polymer which has simultaneously a hydrobyte alloon group and a hydrobyte alloon group (E) which are 1 or 2.

carbon number of four or less alkoxy group. A dimethoxymethyl silyl group is the most preferred.

(0046]There are following method (\*\*) and (\*\*) in a method of obtaining a polymer (A) that a

group ans a reproprior access group of the contract are 1 or 2.

Studies an an expension of the contract are 1 or 2.

(3) and a thydrolytic allicing roup (E) which have a hydrolytic ellicion group which is 1 or 2.

(3) and a thydrolytic allicing roup (E) which have a hydrolytic ellicing roup which is 1 or 2.

(3) and a thydrolytic allicing roup (E) which have a hydrolytic ellicing group which is 1 or 2.

(3) and a reference allicing a polymer (A), all baught the redocular weight of a polymer (A) in this fine-reference an allocate values where a soonfaint go the saw seed, it is preferred that it is 8000—

Opposition to a seather than which preset instruction is attached to plaining, a objurn of the molecular registration to seather than the consideration of the molecular registration of the molecular registration. The most preferred dut it is a molecular weight; it is preferred that it is associately 8000-25000, and it is most preferred that it is 12000-20000. For a suze of adheative at the secondary which intensity is the intensity of the mines of the molecular weight; 80000 to preferred them becoming what has a Indicated material week when lower than 8000 and according 30000, wortability to exempt the property of the molecular weight; it is more preferred that it is 8000-20000, and it is preferred that it is expected that it is expected that it is expected that it is expected that it is applied to the contract of the property of the

Official Power (in Optional by polymering a polymerinen nature neutration person context monomer (iii) A count-temperature-outing nature constitution in the context of the count of the co

these. CRR5=CR3R4 ... (10)

Fig. 27, and Price is independently all of the control of the cont

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JP,2000-109678,A [DETAILED DESCRIPTION]

methaorylamide; Acrylonitrile, Gyano group content monomers, such as 2,4-dicyano butene-1; content monomer [, such as methallyl glycidyl ether, glycidyl acrylate, and glycidyl methacrylate, ]; finyl acetate, Vinyl ester system monomara, such as vinyl propionate; Butadiene, isoprene, Diene system monomers, such as ohloroprene; Vinyl glycidyl ether, allyl glycidyl ethar, Glycidyl group

and olefins other than these, unsaturation ester species, a halogenation olefin, vinyl ather, etc. are

styrene is used especially, since a further outstanding adhesive property and a mechanical physical proporty may be revealed, it is desirable. When requiring rubber elasticity especially after hardening, it nay use two or more sorts together. When a cyano group content monomer, a glycidyl group content 0055]A polymerization natura unsaturation group content monomer (0) may use only one sort, and nonomer, or a styrene monomer is used and scrylonitrile, glycidyl scrylate, glycidyl methacrylate, or

formula (1) can be used as a polymerization nature unsaturation group content monomer (G). A compound expressed with a following formula (11) especially as a polymerization nature monomer 0056]A polymerization nature monomer which has a hydrolytic silicon group expressed with a which has such a hydrolytic silicon group is preferred. s preferred to use acrylic ester.

7-SIY, R6 3-6 ... (11)

 $\mathsf{R}^7$  is a univalent organic group which has a polymerization nature unsaturation group among a formula (11), R<sup>6</sup> is a univalent organic group substitution of the carbon numbars 1-20, or

nore R<sup>6</sup> exist, those R<sup>6</sup> may be the same, or may differ, and when two or more Y axists, those Y may insubstituted, Y is a hydroxyl group or a hydrolytic basis, and b is 1, 2, or 3.) however, when two or

which has a hydrolytic silicon group, an acrylic monomer which has a hydrolytic silicon group, etc. are 0057] As a polymerization nature monomer which has a hydrolytic silicon group, a vinyl monomer nentioned. The following are specifically mentioned and 3-acryloyloxypropyl trimethoxysilane and

0058] Vinylmethyldimethoxysilane, vinylmethyldiethoxysilane, vinyl methyldi chlorosilioane, finyltrimetoxysilane, vinyltricthoxysilane, vinyl trichlorosilane, Vinylsilane, such as tris (2– sspecially 3-methacryloyl oxypropyl trimethoxysilane are preferred.

Acryloyloxy silanes, such as 3-methacryloyl oxypropyl trimethoxysilane and 3-methacryloyl oxypropyl methyl dimethoxysilane, 3-acryloyloxypropyl trimethoxysilane, 3-acryloyloxypropyl triethoxysilane, methoxyethoxy) vinylsilane. 3-acryloyloxypropylmethyldimethoxysilane. 3-methacryloyl oxypropyl triethoxysilane, and methacryloyloxy silanes

louble bond and a hydrolytic basis can also be used as a polymerization nature monomer which has a 0059]A compound which has simultaneously a silicon atom which is a polysiloxene compound which ass 2-30 silicon atoms other than these, for example, and was combined with a carbon-carbon sydrolytic silicon group.

0060]A polymerization nature monomer which has the above-mentioned hydrolytic silicon group may nonomer which has a hydrolytic silicon group, this monomer has that preferrad of \*\*\*\*\* for 0.01 -- 20 veight sections among polymerization nature unsaturation group content monomer (C) 100 weight use only one sort, and may use two or more sorts together. When using a polymerization nature

preferred that it is a monomer which has a hydrolytic silicon group which has a polymerization nature 0061]As for a part or all of a polymerization nature unsaturation group content monomer (C), it is 0062](Polymer composition) When a polyoxyalkylene polymer (B) contains a polymer (D) further, a insaturation group and is expressed with a glycidyl group and/or a formula (1).

0063](\*\*) How to mix a polymer (D) produced by polymerizing a polymerization nature unsaturation solymer composition which consists of a polyoxyalkylene polymer (B) and a polymer (D) can be \*\*) How to polymerize a polymerization nature unsaturation group content monomer (C) in a group content monomer (C) beforehand with a polyoxyallylene polymer (B). nanufactured by a method of (\*\*) shown below - (\*\*).

roup content monomar (C) in a polyoxyalkylene polymer group (F) containing an unsaturation group. \*\*) How to change an unsaturation group in a polymer group (F) which remains into a hydrolytic sillion group expressed with a formula (1) after polymerizing a polymerization nature unsaturation oolyoxyalkylene polymer (B).

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A converting method of a method to which a hydrosilyl compound expressed with an unsaturation \*\*) How to change a precursor into a polyoxyalkylene polymer (B) after polymerizing a group by a formula (3) is made to react is prafarred.

olymerization nature unsaturation group content monomer (G) in a precursor of a polyoxyalkylene

(\*\*) How to mix with a polyoxyalkylene polymer (B), rank second if needed, and distill off a solvent or a diluent after polymerizing a polymerization nature unsaturation group content monomer (G) under existence of a solvent or a diluent.

group (F) is preferred. A polyoxyalkylene polymer group (F) containing an unsaturation group can also polymerize with radiation or heat in the case of a polymerization nature unsaturation group content monomer (G) polymerization, without using a polymerization initiator depending on the case. About a polymerization initiator, polymerization temperature, and polymerization time, it is the same as said group content monomer (C). As a diluent, an unsaturation group content polyoxyalkylene polymer 0064JA solvent can be suitably chosen according to a kind of polymerization nature unsaturation 0065]Polymerization initiators, such as a radical generator, may be used, and it may be made to be made to exist in a solvent or a diluent in the case of a polymerization. \*\* described.

(B) / polymer (D) is used in the range used as 100 / 1 = 1/300 at a weight ratio. It is preferred to be used in 100 / 1 = 1/100, further 100 / 1 = 1/10 especially in respect of workshifty etc. (0067)It may be distributing uniformly in the shape of a particle in a polyoxyalkylene polymer (B), or a [0069] In this invention, at least one sort of tin compounds (K) chosen from a group which consists of ndispensable. When not using such a curing catalyst, reaction velocity of crosslinking reaction of a polymar (D) may be dissolving uniformly again. When viscosity and workability of a constituant are .0066]When using a polymer (D) in this invantion, it is preferred that the polyoxyalkylene polyme (0068]In order to reveal an effect of this invention, a compound specific as a curing catalyst is taken into consideration, it is preferred to distribute uniformly in the shapa of a particle. hydrolytic silicon group will not become sufficient.

(K-3); (K-1) A mixture or a reactant with a low molecular weight compound (L) which has a hydrolytic A tin compound (K): (K-1): A tin compound expressed with a following formula (2). (K-2): A tin compound expressed with a following formula (3). following - (K-1) (K-4) are used as a curing catalyst.

(K-4): (K-2) A mixture or a reactant with a low molecular weight compound (L.) which has a hydrolytic

R<sup>2</sup> <sub>2</sub>Sn (OZ) <sub>2</sub> -- (2) silicon group.

silicon group.

(R<sup>2</sup> is a univalent hydrocarbon group of the carbon numbers 1-20 among a formula (2) and (3), and Z is a univalent hydrocarbon group of the carbon numbers 1-20, or an organic group which has a [R<sup>2</sup> <sub>2</sub>Sn (OZ)] <sub>2</sub>O ... (3)

portion which can form a coordinate bond to Sn by intramolecular.) two or more R<sup>2</sup> may be the same, or may differ, and two or more Z may be the same, or may differ. [0070]Or a tin compound (M) which consists of (M-1) and/or (M-2) is used as a curing catalyst. As for a tin compound (K-1) of this invention, it is preferred that it is a tin compound obtained by a method of manufacturing a tin compound (M-1).

carbon numbers 1-20, and) two or more R<sup>2</sup> may be the same, or may differ. Reactant produced by A tin compound (M) : (M-1). An oxygenated tin compound expressed with at least one sort and  $\mathrm{R}^2$ SnO which are chosen from a group which consists of a compound, an acetylacetone, and ethyl acetoacctate which have a hydroxyl group (however, R<sup>2</sup> is a univalent hydrocarbon group of the making react.

specifically A methyl group. An athyl group, n-propyl group, i-propyl group, n-butyl group, n-amyl  $[0071]R^2$  in an oxygenated tin compound is the same basis as the above-mentioned basis, and (M-2): (M-1) A mixture or a resotant with a low molecular weight compound (L) which has a hydrolytic silicon group.

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compound, although 2SnO, (aghg/2SnO, (aghg)2SnO, (agh<sub>17</sub>)2SnO, (aghg)2SnO, etc. are mentioned, for group, i-amyl group, n-hexyl group, a cyclohexyl group, n-octyl group, a 2-ethylhexyl group, a launyl group, a stearyl group, a stearyl group, group, etc. are mentioned. As an example of an cxygenated tin

exampla (CH2), it is not limited to these.

compound, For example, methanol, ethanol, n-butanol, 2-ethylhexanol, ; alcoholic [, such as fauryl sthanolamine, dimethyl propanolamine, and diethanolamine; although mercaptoalcohol, such as 0072]As a compound etc. which have a hydroxyl group made to react to an oxygenated tin --- phenols [, such as nonyl phenol, ]; --- propanolamine. Amino alcohol, such as alcohol, 3

0073]As for a tin compound (K-1), it is preferred that it is especially a compound expressed with a nercaptopropanol, etc. are mentioned, it is not limited to these. following formula (4) or a following formula (5).



(2)

and) Y An amino group, a hydrocarbon group (carbon numbers 1-8), a halogenated hydrocarbon group alogenation alkoxy group (carbon numbers 1-8), and a cyanoalkoxy group (carbon numbers 1-8 other 0075](Among a formula (4) and (5), R<sup>3</sup> is a univalent hydrocarbon group of the carbon numbers 1-29, (earbon numbers 1-8), it is the basis chosen from the group which consists of a cyano alkyl group carbon numbers 1-8 other than a cyano group), an alkoxy group (carbon numbers 1-8), a

han a cyano group), two or more R3 may be the same, or may diffar, and two or more Y may be the same, or may differ.

atom which a hydroxyl group and/or a hydrolytic basis combined can be used, and it is preferred that t is 1000 or less molecular weight. A silicon compound especially expressed with a following formula nvention, a low molecular weight compound which has a hydrolytic silicon group containing a silicon 0076]As a low molecular weight compound (L) which has a hydrolytic silicon group used by this 12) is preferred.

SIX1 4-6 -- (12)

among a formula, X1 is a hydroxyl group or a hydrolytic basis, and b is an integer of 0-3. when two or nore  $R^8$  exist, it may be the same or may differ, and when two or more  $X^1$  exist, it may be the same 18 is a univalent hydrocarbon group substitution of the carbon numbers 1-20, or unsubstituted

0077]R<sup>8</sup> is a univalent hydrocarbon group substitution of the carbon numbers 1–20, or unsubstituted, prefarably. They are a mathyl group, an ethyl group, a propyl group, a propenyl group, a butyl group, a and is a with a carbon number of eight or less alkyl group, a phenyl group, or a fluoro alkyl group

[0076]X is a hydroxyl group or a hydrolytic basis, and there are a halogen atom, an alkoxy group, an cyloxy group, an amide group, an amino group, an aminooxy group, and a KETOKISHI mate group as hydrolytic basia, for example. As for aspecially a carbon number of a hydrolytic basis which has a texyl group, a cyclohexyl group, a phenyl group, etc. espacially praferably.

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carbon atom among thase, four or less are [six or less ] preferred. As desirable X, a with a carbon number of four or less lowar alkoxy group especially a mathoxy group, an ethoxy basis, a propoxy group, etc. can be illustrated.

Dimethoxy dimethylsilana, Dialkoxy silanea, such as diethoxy dimathylsilane; mono- alkoxysilane, such as methoxy trimethylslane and ethoxy trimethylsilane, those hydrolyzates, or a partial hydrolysate is tetramethyl allicate, Trialkoxysilane, auch as TORIETOKISHI methylsilana and trimathoxy vinylsilane; 0079]Specifically Tetra alkoxysilane; trimethoxy methylsilanes, such as tetraathyl allicate and

[0080]Those hydrolyzate or partial hydrolyzates, such as acetoxysilane, such as chlorosilicanes, such as chlorotilicanes, such as chloro trimethylsllane and dichlorodimethylslane, dimethyldi acetoxysllane, and [0081]Considering influence of an ease of handling, and physical propertles on a cured body, vinyftriacetoxysilane, and N-trimethylsilyl acetamide, are also mentioned.

alkoxysilane, especially a dialkoxy silane are preferred. Partial condensate of these silicon compounds can also be used.

1) or a using rate of (K-2) can be chosen arbitrarily, in order to improve cold cure nature notably, the or (K-4) has a hydrolytic silicon group --- or (K-2) --- from --- it is obtained. It may be a low molecular .0082]a low molecular weight compound (L) and a tin compound (K-1) in which a tin compound (K-3) temperature -180 \*\* for 1 to 10 hours in a low molecular weight compound (L) which has a hydrolytic .0084]A low molecular waight compound (L) which has a hydrolytic silicon group, a tin compound (Kweight compound (L) which has a hydrolytic silicon group, a tin compound (K-1), or (K-2) a mixture produced by only mixing, and it may react, and may become a reactant, and they may live together. .0083]As for a tin compound (K-3) or (K-4), it is preferred to obtain by agitating at ordinary silioon group, a tin compound (K-1), or (K-2) a flask which carried out the nitrogen purge.

two or more sorts may be used together, and it may use together with other catalysts other than the range of (L)/(K-1) or (K-2) =1 / 0.1 - 1/10 is preferred, and especially (L)/(K-1) or (K-2) =1 / 0.5 -(B) When it becomes less than 0.01 weight sections, pot life is long but since an adverse effect will preferably 0.01 to 10 weight section to a total of 100 weight sections of a polymer (A) or a polymer [0085] In use of a tin compound (K) as the above-mentioned curing catalyst, it may be used alone, appear in physical properties, such as heat resistance, if a cure rate becomes insufficient and ten above. The amount of tin compound (K) used as these curing catalysts is 0.1 ~ 5 weight section

compound is mentioned as such a curing catalyst. A salt, various kinds of acid, and a base substance of carboxylic acid of various metal, such as an alkyl titanate, an organic silicon titanate, and dibutyritin dllaurate, can be used. Specifically, amina salt, such as 2-athylhexancic acid tin, 2-athylhexancic acid ead and dialkyl tin dicarboxylic acid salt, organic amine, and dibutyl amine 2-ethylhexoate, etc. are [0086]Other curing catalysts are used together and a cure rate can be controlled. The following

weight sections are exceeded, it is not desirable.

included by room-temperature-ouring nature constituent of this invantion. Hereafter, an additive 0087](Room-temperature-curing nature constituent) The following additive agent can also be

amount of bulking agent used has 50 - 250 preferred weight section 0.001 to 1000 weight section to a total of 100 weight sections of a polymer (A) or a polymer (A), and a polymer (B). The following are 0088](Bulking agent) A publicly known bulking agent can be used as a bulking agent. Especially the mentioned as an example of a bulking agent. These bulking agents may be used independently and agent is explained.

0089]Caldium carbonate which carried out the surface treatment of the surface with fatty acid or a micrometer or less which impalpable-powder-ized this calcium carbonate further, Calcium carbonate resin acid system organic matter. Colloid calcium carbonate with a mean particle diameter of 1 such as precipitated calcium carbonate with a mean particle diameter of 1-3 micrometers may be used together two or more sorts.

hydrous silicic acids, and carbon black, Magnesium carbonate, diatomite, calcination clay, clay, tale, titanium oxide, bantonite, organio bentonite, ferrio oxide, a zino oxide, an active white, a milt balloor glass balloons, wood flour, pulp, a cotton chip, mica, and blacking wash farina --- rubbing --- powder diameter of 1~20 micrometers. Fumed silica, sedimentation nature ailica, a silicic acid anhydride, manufactured with a sedimentation method, and heavy caloium carbonate with a mean particle

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state bulking agents, such as farina, graphite, aluminum impalpabla powder, and the Flirt powder. Fibrous fillers, auch as sebestos, glass fiber, a glass fillament, carbon fiber, the Kovlar textiles, and a reviewhelen fiber. Configurations A, purilipois from on particles can be usual as a particles. That amount of patheticist made and 0001 - 1000 preferred weight section to a total of 100 weight section of a polymer (A) or 1000 preferred weight section to a particle section of a polymer (A) or 1000 preferred weight section to a many configuration and only only or 1000 plants, and or 1000 plants or 1

(DDD), chances, by departing on physical and provinciation ophical series. DDD (CA) chances are although on property funds in order to improve an adhesive property further. As these achieves pract agents, aliane coupling agents, such as (metabloor) follow; ordered y further. As these achieves pract agents, aliane coupling agents, such as (metabloor) follow; or content Silane, and carbooly group content Silane, and carbooly group content Silane, are mentioned.

contant Starg, and carboxyl group contrant Stlang, are mentioned.

30 (2003) Le (methbarylothory group contrant: Stlang, are intenducerylot oxportopyl trinethoxysillans, 30 (2004) (oxportopyl trinethoxysillans, 3-methararylot) oxportopyl methyl dimethoxysillans, atc. are not oxide the starget of the starget oxide the

(D08) As a more group cortext (Stageng Saminopropor) transference properties of saminopropor) transportations annicoprocopy in Help (Interbospillan R-Cl-amboethy-S-aminoprop) trinchosopillans, HCQ2amboethy-Q2-aminopropy (nethy) directbospillan, R-Cl-amboethy-S-aminopropy trinchosopillans, amboethy-S-aminopropy (nethy) directbospillans, amboethy-S-aminopropy (nethy) directbospillans, amboethy-S-aminopropy (nethy) directbospillans, amboethy-S-aminopropy (nethy-dopplessillans, amboethy-S-aminopropy) (nethy-dopplessillans, amboethy-solitor) (nethy-solitor) (nethy-

"- unido proget fricthrootalism, I-CVI - implement 2 - aminoethyl-3-aminopropyl trianthroy allans, 3serido proget fricthrootalism, to a comprised a maniformal arminopropyl trianthroy allans, 3-(2005) As authorism, and a maniformal arminopropyl arminopropyl arminopropyl arminopropyl (2005) As authorism, and a maniformal arminopropyl armino

triethooyalans, 2-merse proposymentyl dimethooyalans, 3-mersept propyinethyl disthooyalans triethooyalans, 2-mersen proposymentyl dimethooyalans, 3-mersept propyinethyl disthooyalans (DRO)As eacong group cortents (Sleng, 3-thyloidylooyapropyl trinethooyalans, 2-thyloidylooy propylmethyl dimethooyalans, 3-thyloidylooy propyl triethooyalans, etc. are mentioned

All Ago, a cochosy gar, un centerni Simira Z -cierbosyethy i (pricovaline), "z-cierbosyethy physiological and a consistent and a common part of the common part of th

hours.

Visit a compound may be used alone and may be used alone and may be used bagether two or more biddly. As some to failed. The amount of allane coupling agent used has 0 – 30 perfected weight section to a total of 100 with section of a polymer (A) or a polymer (A), and a polymer (B).

(010)Len apocy read may be added as an adhosive great An epocy reach hardoner may be there were dependent in remote A common apport again in mentioned as a supery reash which can be added to a constituent of this investion. Seadinably, the following can be illustrated 0 – 100 weight and a common and a superior of the investion of the control of the weight sections of a polymer (A) or a notioner (A) and a notioner (E).

olymer (V), and a polymer (B).

(DIOI N, elected A-eligicy) factor type spoxy resin, a bisphenol F-eligicyclyd, ethur types epoxy resin, Fro retardurou y type epoxy resins, auch as a beharbormolisisheron A-eliyolidy ether type epoxy resins, and was a beharbormolisisheron A-eliyolidy ether type epoxy resin, a five factor type epoxy resin, a five factor type epoxy resin, a five factor type epoxy resin a five factor type epoxy resin a five factor type epoxy resin and in the factor type epoxy resin and is beharbor A-epoxylene oxide suddings (+glosidyou) henzo eaid glosidy, phthalio

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0102]A hardening agent (or curing catalyst) of the above-mentioned epoxy resin may be used

together the a consequence of this invention. A interface greater for earnor visits generally used as such a hardware the anomalous control of the monature of the invention of the amount used is preferred to an open year.

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(0.00)(Doughwaten) in order to improve the storage stability of a hardenshilly constituent of this storage interference of the storage stability of a hardenshilly constituent of this improve the storage stability of a hardenshilly to ender to improve the storage stability of the mean solvens effect on marken hardenshilly to pisalish. This amount of doughwater used its storage of the control of the stability of the storage of the storage

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The anealy of a little has a system studies and surface to be used to reserve the system of t

appet nature. As such a thixotropy grant agent, hydrogenation castor oil, fatty acid amide, etc. are

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OH 11Drying of represented by tung cli lineated oil dec, as such an air-coidation handenshility beneated. As a such an air-coidation handenshility beneated, handly object with the such and problem which because the such as a polymer of a dentaturation, the dentaturation who are a polymer of a such as a polymer, and a such as a polymer, or a such as a polymer, and after a such as a such as a polymer, and a such as a such as

[0112]A room-tamperature-curing nature constituent of this invention is suitable for a use as which it not be used for submitting the working material adhesives, coording against, an affording material adhesives, coording against, an additional to the invention of all adhesive force and adhesive force adhesive force and adhesive force and adhesive force adhesive force and adhesive fo

oxide, and copper phthalocyanine blue, and Phthalocyanine Green, are mentioned to paints.

[EarmpiolThe example and comparative sumple which produced the hardened material are shown that the usual part is produced that the samples in 1,152 and the manufacture. A part shown a weight section, in the samples 1–12 of manufacture, a hydroxyl value or conversation measurate which has been present a sample 1–12 of manufacture, a hydroxyl value opportunities polymer which has a hydroxyl group widen is a real measural by the glass confirmed to the present by the glass producing the light of the sample 1–12 of mention conversation than the sample of the s

belower. The amplicial curve was prepared using polycyters.

It amplicial curve was prepared using polycyters.

It (Elizampe I of restanciate University of the properties of

10.15[Standed of a first end was designed,
10.15[Standed of a first end was designed of the process of white conversion
10.15[Standed of a first end was designed of the process of the pr

existence of a platinum catalyst to this reactant, and the polymer P2 which has an average of 1.3

(D116)Example 3 of manufacture) Poleoxyprophene, the about of hydroxyl value conversion molecular (D116)Example 3 of manufacture) Poleoxyprophene heaved of hydroxyl or conversion of a first three properties of evidence of a soft process, and the behavior mode the behavior prophene and or collection of the process compound enabyet reset, and was obtained 3 10000, and confirmed the properties of the prophypophene does when his manufacture was obtained the hydroxyl process with research or an entertool as the example 1 of manufacture was obtained (the hydroxyl process within research and in the properties of the produced the produced from the produced from the produced from the process of t

"y" is at the example 1 of manufacture was obtained (the hydroxyl proups which remain are 0.01 millimeds (g). The brinchoyalisms which is hydroxially compound was made to reast under existence of a platform catalyst to this reactent, and it is oblymore P3 which has an average of 3.9 mirroboxystall groups at the end was obtained.

[0117] Canaged 4 of manifestury) The infattive which made the mole ratio methyl directhousylation (1017] Canaged 4 of manifestury) The infattive which made the mole ratio manifestury). The infattive conformation of the conformation of the conformation of the polymer of the polymer of the manifestured of the plaining each polymer of the infattive conformation of the polymer of the conformation of the particular conformation of the

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(0118)(Example 5 of manufacture) 3-mercapto propyletmethoxyalane which is a sliyl compound to the polymer U in manufacture) in the example of for manufacture, it was meet to react using the 22-apply 22-applyletycomfile which is a polymerization initiator, and the polymer F9 which has an

we consider "a residuation relief with it is polymerated in pulling and the polymer F9 which has an overage of two furnithorapilly groups at the end was obtained.

For the pulling and the pulling are pulled to the pulling and the pulling are pulled to the pulling and t

the and was obtained as if manufacture?) The polyocopicopidese gives of invitross varieties convention of DITE/Example 8 of manufacture.) The polyocopicopidese gives of invitross makes the behavior produces code of medicative weight is which used provides given compact contribute and weight which are obtained in a new distribution of the  $M_{\rm eff} M_{\rm eff} M_{\rm eff} M_{\rm eff} M_{\rm eff}$  where compact compact data was obtained by the same medicate at the sample of the manufacture was obtained than an analysis operation where the production of the sample of the manufacture was obtained (the injection) groups which remain are estimation to go belong distribution which is a polytocopy groups with remain are estimation of the production of th

(072)Example 9 of mainfactura) The polycosypropises given of phydroxid value convertion of mainfactural protests in the convertion of mainfactural protests and p

Insignal,  $\lambda_i^2$ . The polymer PIO of the insolemal weight 7000 which makes the trimethoxynslane which in a hydrodal compound react to this under existence of a lethicum canner with the same aroungs of 1240 terminal and 1240 te

has an allyloxy group at the end was obtained (the hydroxyl groups which remain are 0.01

platinum catalyst, and the polymer P11 which has an average of 1.3 trimethoxysilyl groups at the end

(1025)Example 12 of nandiaters) Add 838 g (0.2 mg) of distribition of the to these 150mm in desservant of 10 mg of 2-thylosomae is added, it was made to react removed the manual of which owine out assertopy to obtain bollane of heating dimming multi bis water of the amount of the context inflates after the context included the manual of the context inflates after that, and it was made to execut inflates after that, and it was made to execut inflates after that, and it was made to execut inflates after that and it was made of the context of the distribution of the context of the contex

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dibutyltin dilaurate (DBTDL.) instead of a tin compound (G) or dibutyltin bisscetylacetonate (AC) using 100 copies of things mixed by five P1/of examples P7=7 / 3 (weight ratio.) The result of having done carbonate to 100 copies of polymers shown in Tables 1 and 2 150 copies, After adding 50 copies and he following examinations about the obtained hardenability constituant is shown in Table 1 and Table 0127](Examples 1-10 and comparative examples 1-4) The inside of the polymers P1-P11, Calcium obtained. However, the comparative example 2 and the comparative exampls 4 used two copies of a thixotropy grant agent for di-2-ethylhexyl phthalate, adding one copy for three copies and a manufacture as a curing catalyst was kneaded further, and the hardenability constituent was bisacetylacetonate (AC) 2 copy was added, the compound (Q) obtained in the example 12 of phenolic antioxidant and kneading under a nitrogen atmosphere, Two copies or dibutyltin

nsufficient, interfacial failure (AF) is not preferred [ cohesive failure (CF) is the most preferred, and / more \*\* for 14 days according to a normal condition, the tensile test was donc and the fracture state state, subsequently, thin layer cohesive failure (TOF) is preferred, and since the adhesive property is state > JIS A5758, using an aluminum plate as adherend. After recuperating oneself for 14 days at 30 vith 50% tensile stress and the substrate at the time of destruction was measured. As a fracture (0128)H type tensile test sample was produced based on <50% tensile stress and adhesive failure</li>

ochesive failure ]. [0129]The hardenability constituent was slushed so that it might become a thickness of 4 cm into the atmosphere of 65% humidity at 20 \*\* for 8 hours. The situation of hardoning to a depth direction from hs surface was seen using the needle for [ 1.25g ] asphalt using the penetrator based on JISK2530 direction upper part to a lowar part (penetration, unition) was measured. The one where penatration up with a Spenetration> diameter of 4 cm of a cylindrical shape, and it was neglected under the 0130](Example 13 of manufacture) Based on the method indicated to JP,1-170681,A, 1.4-bis(1ifter that. That is, the degree of penetration of the needle for 5 seconds from the perpendicular s larger means that hardening from the surface is not progressing.

hloro-1-methylethyl\benzens is used as an initiator. The molecular weight which has an isopropenyl as a trimethoxysilyl group at the end by making methanol react to methyl orthoformate furthermore richlorosilane is made to react in 90 \*\* 12 hours, The polyisobutylene system polymer P13 which richloride into a catalyst, and which carried out back dehydrochlorinstion and were manufactured group at a rate of about 92% in the both ends which polymerized isobutylene by msking boron nakes chloroplatinic acid with a catalyst the isobutylene system polymer of about 5000, and was obtained.

nakes chloroplatinic acid with a catalyst the isobutylene system polymer of about 5000, and methyldi chlorositicane is made to react in 90 \*\* 12 hours, The polyisobutylene system polymer P14 which has chloro-1-methylethyl)benzene is used as an initiator. The molecular weight which has an isopropenyl crichloride into a catalyst, and which carried out back dehydrochlorination and were manufactured 0131](Example 14 of manufacture) Based on the method indicated to JP,1-170681,A, 1,4-bis(1group at a rate of about 92% in the both ends which polymerized isobutylene by making boron a methyl dimethoxy silyl group at the end by making methanol react to methyl orthoformate

[0132](Example 15 of manufacture) 90-molfs of 3-isooyanate propyltrinetboxyaliane was made to resert to a not for the terminal hydroxy (groups of thi hydrostantion polybetation (oblyball HA, Misabishi Chemish make), which has a hydroxyl group, and the hydroganation polybetadene urthermore was obtained.

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JP,2000-109678,A [DETAILED DESCRIPTION]

0133](Example 16 of manufacture) the hydrogenation polybutsdiene (polytail IAA.) which has a polymerization object P15 which has a trimethoxysilyl group at the end was acquired.

.0134](Examples 11-14 and comparative examples 5-7) As opposed to 100 copies of polymers shown nydroxyl group et the end 90-molf of 3-isooyanate propylmethyl dimethoxysilane was made to react the phenolic antioxidant, adding one copy and one copy of ultraviolet ray absorbent for the 3rd class 0135]The obtained hardenability constituent was used and the same examination as Examples 1-10 and five copies of sodium sulfate hydrates for the thixotropy grant agent, having added one copy for obtained. However, 14 used 100 copies of things mixed byP13/of examples P14=1 / 1 (weight ratio). system plasticizer (high ZORU of Nippon Oil Chemicals) 75 copies, After having added three copies in Table 3 among the polymers P13-P16, 100 copies and heavy calcium carbonate for fatty acid surface treatment calcium carbonate 50 copies, As a plasticizer a high boiling point hydrocarbon catalysts shown in a table were added, it kneaded further, and the hardenability constituent was hindered amine light stabiliser and kneading under a nitrogen atmosphere, two copies of ouring polymerization object P16 which has a methyl dimethoxy silyl group at the end was acquired. to the Mitsubishi Chemicsl terminal hydroxyl groups, and the hydrogenation polybutadione

0136](Example 17 of manufacture) 100 g of the polymer P1 was put into the reactor with a chuming group, and it heated at 100 \*\*, and it added over 3 hours from the dropping funnel there, agitating the [0137](Example 18 of manufactura) Tha polymar mixtura P18 was manufactured like the example 17 continuing heating churning at 100 \*\* for further 2 hours, devolatilization operation was performed of manufacture except using the polymer P7 (methyl dimethoxy silyl group end) for a raw material solution of 15 g of acrylonitrils, 15g of styrans, and 0.3 g of 2,2"-azobisisobutyronitrile. After under decompression and the polymer mixture P17 of the latter of nabula was obtained. and the comparative examples 1-4 was done. A result is shown in Table 3. instead of the polymer P1 (trimethoxysilyl group end).

[0138](Example 19 of manufacture) 100 g of the polymer P1 was put into the resctor with an agitator, and 50 g of tolsene was added and diluted. Heat this mixture at 100 \*\* and 20 g of acrylonitrile, 20 g and 50 g of acrylonitrile, 20 g methaorylate and 2 g of 3-methaoryloyl oxypropyl trimethoxysilane was dropped under churning over dropping back pan over 30 minutes, and the back carried out heating churning at 100 \*\* for 3 hours. foluene was distilled out of the obtained mixture under 100 \*\* decompression, and the polymer 3 hours. The tolucne solution of 0.2 g of 2,2"-azobisisobutyronitrile was dropped at the end of of styrene, The solution which dissolved 0.3 g of 2,2"-azobisisobutyronitrile in 5g of glycidyl mixture P19 of the letter of nebula was obtained.

[0140](Example 21 of manufacturs) 100 g of the polymar P1 was put into the reactor with an agitator. Hest this at 100 \*\* and 5 g of styrenc, 10 g of methyl methacrylate, The solution which dissolved 7 g distilled out of the obtained mixture under 100 \*\* decompression, and the polymer mixture P21 of the The toluene solution of 0.2 g of 2.2"-azobisisobutyronitrile was dropped at the end of dropping back manufactured lika the example 19 of manufacture except replacing a raw material with the polymer trimethoxysilane, and 0.5 g of 2.2"-szobisisobutyronitrile was dropped under ohurning over 3 hours. pan over 30 minutes, and the back carried out heating churning st 100 \*\* for 3 hours. Toluene was P1 (trimethoxysily) group and), and using the polymer P7 (mathyl dimethoxy silyl group and). of butyl methacrylate, 2 g of methacryllo acid octsdecyl, 18 g of 3-methacryloyl oxypropyl [0139](Example 20 of manufacture) The polymer mixture P20 of the letter of nebula was

manufacture except replacing a raw material with the polymer P1 (trimethoxysily) group end), and 0141](Example 22 of manufacture) The polymer P22 was manufactured like the example 21 of letter of nebula was obtained.

After having added one copy for the phenolic antioxidant, adding one copy and one copy of ultraviolet using the polymer P7 (methyl dimethoxy sityl group end). [0142](Examples 15-19 and comparative examples B-11) The inside of the polymers P17-P22, Fatty atmosphere, two copies of curing catalysts shown in a table were added, it knesded further, and the hardensbilty constituent was obtained. However, 19 used 100 copies of things mixed byP17/of acid surface treatment calcium carbonate to 100 copies of polymers shown in Table 4 50 copies. [0143]The same examination as Examples 1-10 and the comparative examples 1-4 was done. A ray absorbent for the 3rd class hindered amine light stabiliser and kneading under a nitrogen examples P18=1 / 1 (weight ratio). result is shown in Table 4.

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[0145]

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**計入版 0.3** 

Table 2			
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[0146] [Table 3]

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[0147] [Table 4]

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[Effect of the Invention] The hardenability of the depthe is improved and the hardenability constituent in this invention has the effect that an adhesive property with a substrate is good.

[Translation done.]